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A MARRIAGE OF CONVENIENCE: ARAB CAPITAL AND WESTERN EXPERTISE, --ETC(U)

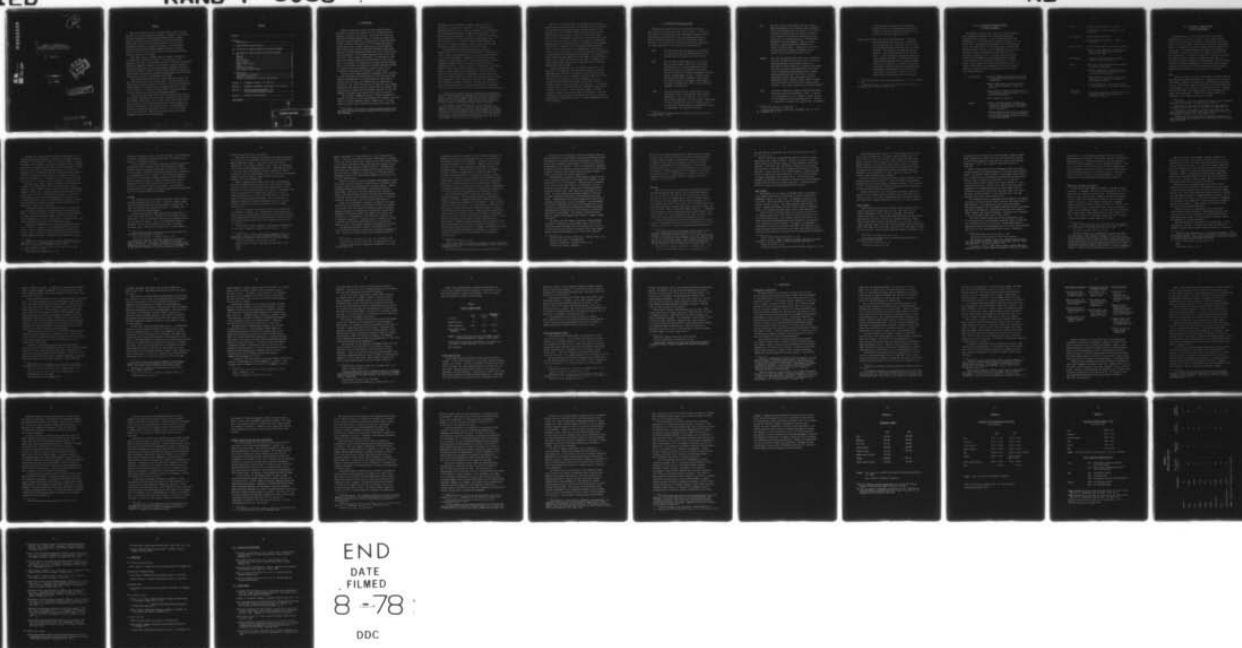
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A MARRIAGE OF CONVENIENCE:
ARAB CAPITAL AND WESTERN EXPERTISE,
THE RECENT GROWTH OF ARAB AIRLINES

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Jake Wien

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January 1978

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PREFACE

What is taking place in the oil-wealthy Arab states is both an economic miracle and a planner's nightmare. Hospitals, universities, factories, warehouses, army barracks, highways, hotels, luxury villas, and airports are all being built in a frenzied disorder. These edifices would not have materialized had it not been for the Western "presence" in almost every aspect of their planning. Evolving coalitions and business partnerships appear in diverse fields, from the military to the civilian, and predominate wherever technical expertise is in demand.

This paper, part of a larger study of economic development of the Middle East, isolates one field -- civil aviation -- and determines the extent to which Arab states rely on Western technological know-how as embodied in products and personnel. Parallel studies of other developing sectors of Arab states would complement this study and better elucidate economic and technological absorptive capacities, organizational and political strengths and weaknesses, and difficulties encountered in efforts toward regional integration.

This present study, however, has taken a developing sector that has received much attention in recent years. The Arab airlines are particularly fruitful as objects of study, for they are well-monitored, visible symbols of national economic strength, and they are often at the forefront of a nation's economic growth, revealing problems which the economy as a whole may subsequently encounter.

The airlines under study also reflect diverging national social and economic trends among the Arab states, trends which have political and economic implications. Not all Arab airlines are advancing with great strides, for the capital needed to buy foreign equipment and technical assistance is not always available. The determination to prolong the prosperity occasioned by the era of oil characterizes only a few Arab states. Most Arab airlines and their host state economies continue to grow incrementally.

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I. INTRODUCTION

Rapidly developing economies are often characterized by substantial reliance upon foreign sources of technically elite manpower, technology, and capital. In the Arab East where oil exports have financed massive inputs of capital, economies with previously limited prospects for expansion are being transformed through industrial diversification. Oil incomes have enabled wealthy Arab states to import technology and trained manpower. These inputs help to fulfill ambitious development plans (Saudi Arabia's 1975-1980 development program alone is over \$140 billion), and bring elements of the advanced industrial West and the Arab East into a close, complex relationship. This marriage of Arab capital with Western expertise and technology is one of mutual gain. For the West, oil expenditures are being recycled, keeping alive certain industry and business that might otherwise stagnate. For the Arab world, even amongst the poorer of Arab states, economies are developing and standards of living rising.

Because rapid economic growth is contingent on the capacities of local and regional infrastructures, oil-rich Arab states have committed enormous sums to the development and construction of electric power sources, and communication and transportation facilities. The civil aviation sector provides the vital linkage between the Arab states and their foreign sources of supply, while furthering both economic and non-economic objectives in the area. Transport investments must precede other productive activity.

The purchase of sophisticated civil aviation equipment has created a situation in which the management and operation of current fleets far exceed indigenous support capabilities.¹ The rapid growth of several Arab airlines occasioned by the economic boom

¹The dramatic acquisition of foreign weapons systems in the Arab East has created a parallel demand for foreign technicians and technology.

following the 1973 oil embargo stemmed from what can best be described as technological transfusion. By contracting for managerial services and for teams of technicians, or by arranging for training missions abroad, a number of Arab airlines¹ have imported requisite personnel and exported trainees to help achieve the self-sufficiency in fleet operation and maintenance that all airlines desire. The kinds of civil aviation products and the nature of technical assistance coming to the Arab East from the West constitute the primary concern of this paper.

"Petrodollars" have enabled Saudi Arabia and Kuwait to augment the fleets of their state-owned airlines, to expand routes, and to capture a growing proportion of the well-developed market for oil-related passengers. Although the oil-rich states have comparatively small populations,² their wide-bodied jets and well-equipped, enlarged airports collectively service millions of passengers each year. Modern facilities for maintenance and service, however, function only with the support of an intricate web of expertise, both technical and institutional. Both the oil-rich and the oil-deprived suffer from dependence upon extra-national work forces, but because the oil-rich states are best able to finance the rapid growth of their airline sectors, they are consequently most dependent on outside assistance. The most populous states in the region, Egypt and Iraq, have been moving slowly in developing their aviation sectors and have been less reliant on foreign assistance.

¹The airlines considered here are those based in the Arab East which have grown to dominate passenger and cargo services within the region: Alia (Jordan), Egyptair (Egypt), Gulf Air (a consortium for the Gulf States), Iraqi Airways (Iraq), Kuwait Airways (Kuwait), Middle East Airlines (Lebanon), Saudia (Saudi Arabia), Syrian Arab Airlines (Syria), and Trans Mediterranean Airways (Lebanon).

²For example, Saudi Arabia has the *largest* population of peninsular oil-rich states. It recently released the 1974 census figures: 7,012,642, over one million of whom are assumed by informed officials to be extra-nationals living in the Kingdom. This census is the first ever to be published, because Saudi population has been, and still is, a sensitive issue, partly because of its implications for continuing reliance upon extra-nationals to sustain the current rapid growth. *The Guardian Weekly*, 12 June 1977.

Because of capital surpluses, the dependence is particularly marked in Saudi Arabia and certain of the Gulf states. The shortage of technically-skilled manpower among the native population and the absence of local aviation training centers are the two major obstacles blocking the road to greater self-sufficiency among Arab airlines. The absorptive capacities of the Arab states in the field of civil aviation vary widely, and can best be explained by highlighting local economic, political, and historical developments. The existence of dynamic forces and conditions within the host state's economy, the quality of its administrative structure and social order, the character of its educational system, and the nature of legal property relationship will be discussed. An assessment of these factors and their impact on recent trends in the Arab aviation sectors will be the second concern of this paper. Technical and institutional support capacities are compared across airlines and growth trends are assessed.

Finally, implications for the economies and politics of the Arab states are suggested. The substantial reliance on Western governments and contractors has enabled certain Arab states and their airlines to prosper, instilling a fiercely competitive spirit into what was previously a relatively tranquil sector, and accentuating the already wide economic gulf between the Saudi Arabian peninsular states and Egypt, Iraq, and Syria. The growing economies of the oil-wealthy have been accompanied by new political strengths in the region. At the same time, however, economic relations outside the region have become circumscribed. From the perspective of the suppliers, the substantial reliance on Western technology has assumed the character of implied commitments and even tacit alliances.

II. INSTITUTIONS FOR ARAB AVIATION

Numerous institutions have been established to formulate plans for and to oversee the growth of Arab airlines. To overcome the barriers of inward-looking state development strategies and to transcend political mistrusts, inter-Arab organizations help to develop manpower and material resources in furthering regional interests. The following are noteworthy institutions established to advance the growth of civil aviation in the Arab world:

- AACO The Arab Air Carriers Organization is an industry or trade association, the Arab equivalent of the International Air Transport Association (IATA).
- AASC Arab Air Services Corporation, Ltd., is an Arab-American owned company organized to assist Arab airlines and civil aviation departments in their modernization plans, including data processing, airport construction and project management, logistics support, and management services. Former Pan Am Chairman Najeeb Halaby is Chairman of AASC, which has offices in New York and Amman. AASC helped to coordinate the Middle East Civil Aviation Conference (MECACON) in October 1977.
- CACAS The Civil Aviation Council of Arab States is the equivalent of ICAO -- International Civil Aviation Organization -- for the Arab world. It is one of the 17 special agencies of the Arab League. Established in 1967 to develop and foster air transport both in the region and internationally, its membership includes 17 governments' civil aviation directors.¹

¹ICAO Bulletin, December 1975; Aviation Week and Space Technology, 24 November 1975, p. 28.

- CASC The Civil Aviation Safety Centre (Beirut) provides 4000 student-weeks a year (average student complement: 70-80, from the Middle East and Africa) in the following higher-training courses in English: airmanship, airport operation and services, engineering, search and rescue, and accident prevention. The Centre has engineering training equipment, cockpit procedure trainers, a general purpose jet simulator and a digital 707-320 simulator. Eighty percent of funds are provided by the Lebanese Government, and 20 percent by the United Nations special fund.¹
- MECACON The first annual Middle East Civil Aviation Conference took place in Amman in late October 1977. During the three-day meeting a broad range of issues were discussed to improve regional air transport performance. The lack of procedural standardization (air-traffic-control systems and ground handling) and of trained, experienced manpower were the two major concerns. Representatives from most Arab states, and from Afghanistan, India, Pakistan, Taiwan, Romania, Canada, the United States, and several West European nations attended. Iraq, Libya, and Morocco were notably absent.²
- RJAA The Royal Jordanian Air Academy evolved from the Royal Flight Club which was established in 1966. In 1968 it was transformed into an air academy to conduct mechanical and commercial flight training sessions. Training is conducted by Jordanian (51), British (20), and American

¹*Flight International*, 13 March 1975.

²*Aviation Week and Space Technology*, 28 November 1977, pp. 26-27; and 5 December 1977, p. 34.

(1) instructors,¹ and usually takes 18 months. Through July 1976, 474 graduates had been awarded diplomas, 140 of whom (29 percent) are private and the rest (71 percent) commercial pilots.²

Pan Arab Air University has not yet been established. CACAS and AACO have endorsed the project but a location has not been decided upon. Jordan has offered to host the new University which might supersede, in effect, the RJAA. The University is potentially the most important civil aviation institution for the Arab world. It will standardize training throughout the region, augment the number of indigenously trained technicians and managers, help to surmount language barriers, and contribute to a sense of cooperative achievement. Special classes in flight engineering, meteorological observations, and electronics are among those to be offered. It will be at least a decade before the University is fully realized.

¹An all-Jordanian staff is the long-term goal. *Interavia*, 10/1977, p. 1037.

²JPRS *Translations on Near East and North Africa*, No. 1674, p. 3. Originally from *AL-Dustur*, 29 April 1977.

III. AN OUTLINE OF FOREIGN TECHNICAL ASSISTANCE PROGRAMS

Many Western firms are under contract to provide technical and/or managerial assistance for the Arab airlines under consideration in this paper. As can be ascertained from the following list of foreign technical assistance programs, all the airlines have continuing relationships with one or more Western firms. Since many private sector transactions do not make the published sources, the list is not comprehensive, but can nonetheless be taken as representative of the major technical assistance programs in effect. Prominent among the evolving bilateral relationships are: Pan Am assists Alia, Lockheed assists Egyptair, British Airways assists Gulf Air, Boeing assists Iraqi Airways, and Lockheed and TWA assist Saudia. The degree to which these foreign firms are involved in the daily operation of Arab airlines is discussed in the body of this paper [See Section IV].

Alia [Jordan]

Lufthansa, SNECMA (Société Nationale d'Etude et de Construction de Moteurs d'Aviation): overhaul work.

Bechtel (replaced by a consortium in early 1977): airport management, consulting services.

ArabAir Services: simulator training facility [not actually "foreign assistance," as it is 51 percent Arab-owned].

Pan Am: technical assistance.

Egyptair

Sofreavia (Société Française d'Etudes et de Réalisations d'Equipments Aéronautiques): consultant, studying Egyptian air-traffic-control requirements.

Lockheed: \$38 million contract for improvement of air-traffic-control, financed by Saudi Arabia; future freight operations assistance is under consideration.

Gulf Air	International Aeradio, Ltd.: avionics. British Airways: L-1011 maintenance, crew training.
Iraqi Airways	Redifon Flight Simulation. Boeing: managerial assistance, support services.
Kuwait Airways	Ballast Nedam [Japanese]: passenger terminal. British Airports Authority: airport management and operations services, 3-year contract 1977-1980.
MEA [Lebanon]	Air France, British Airways, and Sabena: component repair and overhaul.
Saudia	TWA: pilot, crew, ground personnel training; maintenance supervising. Lockheed: \$650 million, 40-month contract for development and installation of a new air-traffic-control system. ArabAir Services: \$5 million contract with Lockheed for computerized management of Hadj (pilgrim) traffic. International Aeradio: \$30 million contract for development of civil aviation technicians.
Syrian Arab Airlines	Paris Airport Authority: \$400,000 contract for Damascus airport terminal building definition studies.

IV. THE GROWTH OF ARAB AIRLINES: FLEETS AND PERSONNEL

Problems peculiar to each Arab state make for dissimilar growth patterns for resident airlines. Socio-economic factors, historical relationships, and political events must be considered when accounting for present capacities and predicting future growth trends. In assessing the current problems and future prospects for each airline, this section surveys and evaluates a broad range of information. Current fleet sizes,¹ the number of personnel (and where information is available, composition of their nationalities),² the number of airports capable of handling the new jumbo jets,³ revenues and profits, indigenous training programs, foreign technical assistance programs, measurements of technical reliability (where information is available), and safety records will be considered. Material will be structured on an airline by airline basis.

ALIA

Alia Royal Jordanian Airlines, established in December 1963, has been wholly government owned since 1968. Originally it was founded with domestic commercial investment with participation by the public sector.⁴ Alia's fleet consists of two B-747s, five B-707-320Cs (four for passengers, one for cargo), one B-720B (used only for training), and two B-727-200As. The company employs 2200, including over 150 pilots and 120 engineers. Jordan has two airport runways over 3600 meters, one in Amman and the other in Aqaba.

¹Information on the fleet composition of Arab airlines originates from *Flight International*, 30 July 1977, pp. 352-353.

²Information on the size and distribution of fleet personnel originates from the *World Aviation Directory*, Fall 1976, No. 73.

³Information on the number of airports with runways over 3300 meters originates from *Interavia ABC: World Directory of Aviation and Astronautics*, J. Didelot, ed., 25th edition, 1977.

⁴Information on the origins and on shareholder composition of Arab airline companies originates from *Flight International*, 20 March 1975, pp. 484-501.

In 1975 two subsidiaries were established by Alia: Jordanian World Airways and Arab Wings. The former concentrates on freight traffic, especially fruit and other exports, operates daily services to Europe with two palletised all-freight 707-320Cs, and also serves the Persian Gulf. The latter, Arab Wings,¹ is an executive jet charter service which has been extremely profitable according to Alia chairman Ali Ghandour. The two Learjet 36s and five Learjet 35s can fly to the Persian Gulf and back without refueling.

Alia has recorded profits for three consecutive years, 1973 to 1976. Growth rates of total revenues have been steady, averaging 34 percent annually during these years. However, a drop of nearly 50 percent in profits in 1976 (\$570,000) as compared with 1975 (\$1,038,000) was reported by the company's 1976 financial statement. Delay in delivery of the two B-747s and the operation of the regional route (Aqaba-Amman-Damascus-Aleppo) were the two causes for financial loss cited in the statement. Alia chairman Ali Ghandour stated that the 1976 revenues were about \$80,000,000--82 percent of which were from passengers and the rest from freight. He expected revenues for 1977 to reach \$150,000,000.²

On July 11, 1977, Alia inaugurated the first Arab line to the United States (Amman-Amsterdam-New York) which is operating weekly.³ This transatlantic flight and plans for expansion on other long-haul routes (to South America for example) point to an important shift in Alia's routing. Consequently, Alia's revenues are gradually shifting from old to new sources. Revenues from servicing European traffic are anticipated to rise from (expressed as a percentage of the total) 5 percent (1976) to 37 percent (1977), and from the Persian Gulf from

¹ Arab Wings is owned jointly by Alia (88 percent of the stock) and the sultanate of Oman (12 percent).

² JPRS *Translations on Near East and North Africa*, No. 1634, 4 April 1977, p. 56. Originally from *Al Dustur*, 23 January 1977, p. 5.

³ In 1975, Egyptair, Middle East Airlines, Gulf Air, and Saudia abandoned plans for jointly assuming this route whereby each would have the service for one or two days a week. *Aviation Week and Space Technology*, 28 July 1975, p. 30. The U.S. Civil Aeronautics Board granted permission to Alia and Syrian Arab Airlines jointly. Alia currently operates all flights because of Syrianair's insufficient number of trained B-747 crews. *Interavia*, 10/1977, p. 1035.

36 percent (1976) to 45 percent (1977).¹ Inter-Arab revenues will certainly decline while intercontinental revenues will rise.

The first quarter financial report for 1977 showed a loss of \$2,332,500.² Even though the first quarter is usually a period of stagnation and financial loss, the significant decline in revenues can be attributed to the resumption of Middle East Airline's operations and the assumption of local business and main international routes (to London, Paris, Frankfurt, Rome, and Karachi) by foreign airlines.

Alia strongly emphasizes training, and this is reflected by the fact that all copilots, flight engineers, and stewardesses are Jordanian. Only 10 percent of Alia's pilots are foreign.³ Alia established training programs for its employees in order to boost their performance rate and productivity. More than 275 employees participated in 34 courses organized in 1976. One source indicates that the average productivity of the organization's employees rose in kilometer-tons from 26.420 in 1964 to 103.87 in 1976.⁴

The Royal Jordanian Air Academy (RJAA) has been the main source of flight crews, and is a possible core for an Arab Air Academy, a project set up by CACAS--Civil Aviation Council of Arab States--to train students in all fields. The RJAA is to be expanded and combined with schools for air traffic controllers, meteorologists, dispatchers, and electronic specialists to become a Pan-Arab Air University authorized to award engineering degrees [See Section 11]. It will partly meet the underlying need for major maintenance and overhaul work on engines and airframes in Jordan and in aeronautically less advanced Arab states; but it may be eight to ten years before the university is fully realized.

¹JPRS *Translations on Near East and North Africa*, No. 1634, 4 April 1977, p. 56. Originally from *Al-Dustur*, 23 January 1977, p. 5.

²JPRS *Translations on Near East and North Africa*, No. 1705, 13 September 1977, p. 44. Originally from *Al-Dustur*, 6 August 1977, p. 3.

³Interview with former Pan American World Airways Staff Vice President, Kenneth Fenske, in May 1977.

⁴JPRS *Translations on Near East and North Africa*, No. 1684, 28 July 1977, p. 63. Originally from *Al-Dustur*, 25 May 1977, p. 12.

Concentration on improving the technical capabilities of the Jordanians may help make Jordan an aeronautical training center for the whole of the Arab world. Syrians are already forming a sizeable contingent at the Academy, and Iraq has expressed interest in having some 40 of its nationals receive similar aviation training.¹ ArabAir Services [See Section II] has been playing an active role in the planning of the air university and has organized the construction of a simulator training facility which is not completed. Atkins and Merrill is supplying a B-727 simulator for pilots of Alia and other Arab carriers. It is the only B-727 simulator in the Arab world.²

The other major project currently underway is the construction of Amman's new, \$140 million Queen Alya International airport, expected to open in 1980.³ The new airport will have two 3660 meter runways. Bechtel, Inc., operated as manager and consultant for the construction; in early 1977 Bechtel was replaced by a consortium. A new training school in airport management will be set up to accommodate the future need for 460-500 airport personnel. British Airports Authority, Aéroport de Paris, and Pan American have been approached to help set up this school.

A problem encountered at the present airport is the constant loss of skilled technicians to neighboring states for higher pay. There is a constant struggle in Jordan to improve working conditions to compete with the attractive higher salaries offered in the richer neighboring oil states. Some states of the Persian Gulf offer trained mechanics five times their Jordanian real wage.

Lufthansa and SNECMA carry out maintenance and repair work for Alia at present. Statistics for foreign personnel have not been secured. Pan Am, replacing Pakistan International Airlines in a similar capacity, provided a nine man technical assistance team to provide support and advice in administration, maintenance, ground

¹JPRS *Translations on Near East and North Africa*, No. 1674, 5 July 1977, p. 3-4. Originally from *Al-Dustur*, 29 April 1977, p. 2 and *Flight International*, 6 November 1976, p. 1370.

²*Aviation Week and Space Technology*, 6 June 1977, p. 328; *Interavia*, 10/1977, p. 1036.

³*The Middle East*, August 1977, p. 65.

operations, passenger services, and staff training. Pan Am installed a system of counterpart training in which each unit manager was to instruct his Jordanian successor.¹

As for reliability, one report indicates "technical reliability" (not defined) to be 96 percent, and "time reliability" (flights operating within 15 minutes of schedule) at 78 percent.² However, a recent survey of airlines' safety records placed Alia at the bottom of a comprehensive list of airlines.³ Alia, along with Egyptair, ranked in the "least safe" category, registering 139.34 deaths per billion passenger kilometers. However, another survey did not support this "least safe" classification; only two Alia fatal accidents in the past 15 years were recorded. This statistical finding would tend to support the numerous indicators of high training and safety standards previously confirmed.

EGYPTAIR

The Egyptian airline was founded in May 1932 as Misr Airwork and began scheduled services in 1933. In 1949 the company became completely Egyptian-owned and the name changed to Misrair SAE. In 1960 it was renamed the United Arab Airlines. In October 1971, United Arab Airlines became Egyptair.

Egyptair has two Airbus 300B4s (French wide-bodied jets) on lease, seven B-707-320Cs, one 707-138B, seven B-737-200s, and two Cessna 207s. Cairo International Airport has one 3300 meter runway and one 4000 meter runway. Egypt is developing new airports throughout the country (Alexandria, Luxor, Aswan, Abu Simbel, and Asyut) under a \$210 million 10-year plan, to expand domestic

¹Interview with former Pan American World Airways Staff Vice President, Kenneth Fenske, in May 1977.

²*Flight International*, 6 November 1976, p. 1371.

³*Destination Disaster*, Paul Eddy, Elaine Potter, and Bruce Page, Quadrangle, New York, 1976. See Appendix C, "Airline Safety," pp. 305-383. It should be noted that an Arab Wings (Alia subsidiary) charter plane crashed upon takeoff on 23 September 1977. Two ABC production members and the two Arab pilots were killed.

services and open new areas for tourism.¹

Cairo airport is equipped with sophisticated landing technology. A Plessay Stan 37/38 instrument landing system has been installed on the new 4000 meter runway. A new control tower will soon be completed by a new terminal building. Cairo, Luxor, and Alexandria will receive new VHF communications systems. Overseeing the growth of Cairo and other major Egyptian airports, Sofreavia (a French consultancy firm) is studying Egyptian air-traffic-control requirements. Egyptian orders for nav aids, radar, and air-traffic-control equipment may reach \$100 million.²

Egyptair employed nearly 9000 in 1975, many of whom company officials regarded as quite unproductive.³ Fewer than half (4000) work directly for the airline, while the others perform related services for hotels, duty-free shops, and caterers. Government civil service regulations do not permit the laying off or firing of extraneous personnel, nor do they allow the airline to raise the wages of qualified technical personnel. This latter group is underpaid compared with regional standards; and, as is true with Jordanian technicians, many leave Egyptair to work for other Arab airlines.⁴

The fact that Egyptair has had six chairmen in as many years has weakened the company. By eliminating the top man when serious problems arose, the government contributed to the airline's problems by disrupting whatever long-range planning was in existence, and by forcing many competent people out of the company and even out of the country.⁵

The problems of salary, manpower, and managerial discontinuity are reflected in Egyptair's dismal financial reports. In 1973

¹*Aviation Week and Space Technology*, 1 December 1975, p. 28. According to *Interavia ABC* (1977), Alexandria has four runways measuring only 1540 meters, and Luxor has two 2700 meter runways.

²*Flight International*, 30 July 1977, p. 353.

³*Aviation Week and Space Technology*, 28 July 1975, p. 30.

⁴*Ibid.*

⁵*Ibid.*

Egyptair performed its flight services at a loss of \$592 per hour flown. Similarly, the airline netted the lowest amount of revenues of the Arab airlines under study: \$1480 per hour flown (Kuwait Airways in the lead netted \$3340 per hour flown, while the average for Alia, Kuwait Airways, MEA, Saudia, and TMA was \$2538).¹ Although other Arab airlines are progressing rapidly toward financial solvency and even profitability, Egyptair is going the way of airlines in most developing countries that lack skilled manpower, hard currency, and efficient administration.

Unable to finance new aviation equipment from indigenous sources, the airline has been fortunate to receive some of the massive credit coming into Egypt from wealthy Arab oil-producing nations. Boeing and McDonnell Douglas have promised to help Egyptair receive Export-Import Bank support for short-range aircraft purchases.² Eight of these short-range airplanes (737-200s) have been supplied to Egyptair by Boeing, and purchased with \$65 million in financial assistance from Abu Dhabi, one of the United Arab Emirates.³

Though long acknowledged a necessity for Egyptair, the short-range aircraft were feasible acquisitions only after the expulsion of the Soviets and the severing of bilateral technical exchanges. Egyptair grounded its remaining seven Soviet-built Tupolev Tu-154 transports following the crash of an eighth Tu-154 in July 1974. The return of the transports to the Soviet Union created a gap in Egyptair's capacities for regional service, allowing it to look to the West and especially the United States for new aircraft. Egyptair's fleet is now mainly composed of American-built aircraft.

The Egyptian government's special relationship with the Soviet Union which lasted for many years was abruptly terminated in 1972. Political and economic factors had originally guided the

¹ ICAO Digest of Statistics No. 194: Fleet Personnel, 1973.

² Aviation Week and Space Technology, 17 February 1975, p. 25.

³ Aviation Week and Space Technology, 26 May 1975, p. 22, and 28 July 1975, p. 29.

government eastward in its search for civil aviation equipment: The Russians were willing to accept goods (in lieu of hard currency) in exchange for aircraft and equipment. Similarly, political and economic developments led to the break. Egyptair did not escape the embrace of the Soviet technicians, around whom a political storm had focused. Long before the 1974 Tu-154 crash, Egyptian aviation officials had complained to the Russians about the aircraft's structural defects. According to one report, fifteen defects, three of which were considered major and dangerous, were found during a technical inquiry;¹ Soviet authorities acknowledged the need for modifications but failed to perform them.² Egyptair cancelled its contract with the Soviet Union, demanding reimbursement of the money already paid to Tupolev, and insisting on compensation for losses incurred by the grounding of the remaining aircraft.

The Tu-154 had been partly responsible for Egyptair's poor economic performance. The excess power provided by the NK8-211 engines on the Soviet transport raised direct operating costs about 27 percent higher than comparable B-707 transports. There were other sources of difficulty as well. The unavailability of spare parts in many areas, particularly in Africa, limited the number of airports to which the Tu-154 could be routed. Coupled with the unavailability of spare parts may have been conscious Soviet denial of said spare parts for political reasons. (The failure to send spare parts to repair aircraft and tanks was one reason for Egypt's break with the Soviet Union.) Company officials expressed a strong feeling that the Soviets were making it as difficult as possible for Egyptair to do its own maintenance and overhaul work (for example, maintenance manuals and tools were not provided) thereby forcing Egyptair to return the aircraft to the Soviet Union for such work to be performed at inflated rates.³

¹*Interavia*, 12/1974, p. 1173.

²The Soviets would only perform the modifications after 3000 hours flying time, which none of the Tu-154s had reached. *Flight International*, 13 March 1975, p. 426.

³*Aviation Week and Space Technology*, 17 February 1975, p. 25.

The fact that all of Egyptair's pilots are Egyptian--some are former World War II pilots trained by the British--certainly caused consternation in the Soviet Union concerning Egyptian capabilities. Many of the crew members transitioning to the Tu-154 had little or no experience in jet aircraft.¹ This is a consequence of Egyptair's isolation from civil aviation training institutes in the Arab world or abroad. However, this situation may soon change in light of Sadat's active pursuit of *infitah* (opening up).

Infitah signals a departure from the period of Nasser in that trade ties with the West are to be expanded and investment in the private sector is to be encouraged. American private investment in the civil aviation sector has yet to materialize, for this sector is within the public domain, but two Western programs of technical assistance will affect Egyptair's performance in the future. In 1975 a Boeing team evaluated Egyptair's operations in order to determine areas where outside assistance was most needed. Administrative and technical managerial services may be provided by Boeing under contract to Egyptair. But governmental civil service regulations will have to be reformed first. Also, a division of Lockheed Aircraft Corporation has been discussing with Egyptair the possibility of a joint venture to provide air cargo service within Egypt. The division, Lockheed Aircraft Services, would provide Egyptair with services to manage freight operations.²

The safety record of Egyptair indicates a marked weakness in technical capabilities: nine accidents with a total of 315 fatalities during the 1960s, and five accidents with a total of 67 fatalities during the first four years of the current decade.³ Another survey places Egyptair in its "least safe" category.⁴

¹ *Aviation Week and Space Technology*, 17 February 1975, p. 25.

² *The New York Times*, 23 December 1977.

³ *Flight International*, 23 January 1975, p. 113.

⁴ *Destination Disaster*, Appendix C.

Apart from the problems discussed above, Egypt's past relationship with the Soviet Union in the field of aviation--through personnel training, equipment supply, and managerial support--contributed to Egyptair's poor overall performance.¹ But in 1975 officials pointed to improvements in on-time performance of the airline which had been quite poor. An on-time departure rate of 80 percent was reported. Similar improvements in the passenger service both on ground and in the air have been noted. However, it was still impossible to secure a printed Egyptair schedule, even at the company's office in Cairo.²

GULF AIR

Gulf Aviation Ltd. is a consortium for international services representing Bahrain, Oman, Qatar, and the United Arab Emirates. As such, it fronts as the flag carrier for the central Persian Gulf states. Gulf Air headquarters is located in Manama, Bahrain. Gulf Aviation Ltd. was formed in March 1950 and currently has at its disposal five L-1011s, five VC-10s, three 1-11-400s, three F-27s, three Shorts Skyvans, two Beech Queen Airls, two Bn-2A Islanders, and six B-737-200s. There are some 2800 company employees. A subsidiary, Gulf Helicopters, owns five Sikorsky S-62As, two Bell 205As, and on order one Bell 212. British Helicopter Ltd. owns 24 percent of Gulf Helicopters and provides technical and management services.

Bahrain's international airport has been described as the most modern in the Middle East, and is the only scheduled port of call for Concorde in the area.³ It has two runways measuring 3658 meters. A

¹It is worth noting that the Russian airliner Aeroflot had a seriously flawed safety record during this time as well: an estimated 1539 deaths caused by some 28 accidents during the period 1950-1974. *Destination Disaster*, Appendix C, p. 359. Another report records 12 accidents with a total of 889 fatalities during the first four years of the present decade. This is compared with Pan Am and TWA who had five and four accidents respectively, causing some 288 and 184 deaths. *Flight International*, 23 January 1975, p. 114.

²*Aviation Week and Space Technology*, 17 February 1975, p. 25.

³*Aviation Week and Space Technology*, 22 March 1976, p. 35.

new radar has been commissioned and a new air-traffic-control center is to be built soon.¹

Gulf Air has become a leading Arab operator of TriStars, flying them eleven times a week to London.² Because of Gulf Air's enormous growth trends (a 360 percent increase in total passengers carried from 1970-1971 to 1974-1975, and a 340 percent increase in load ton-miles from 1973-1974 to 1974-1975), the consortium relies heavily on foreign expertise. Indeed, Gulf Air is the largest employer of Western workers on the 240 square-mile island of Bahrain. There is a severe shortage of indigenous management and technical skill. Gulf Air's avionics equipment is maintained and overhauled by the British firm International Aeradio, which provides the necessary personnel. L-1011 maintenance and crew training are being handled by British Airways.³

IRAQI AIRWAYS

Iraqi Airways Ltd. was formed in December 1945 as a subsidiary of the Government-owned Iraqi State Railways and became a financially independent company on 1 April 1960. Its equipment consists of two B-747-200Cs, three B-707-320Cs, three B-737-200Cs, three Vickers Viscounts, and three Tridents. The company employs 3500 including 56 pilots. Baghdad International Airport recently acquired a 3660 meter runway, and a Selenia long-range radar is soon to be commissioned.

Iraq's current low economic profile and relative isolation from its neighbors and the rest of the world are reflected in the state of its civil aviation sector. Most economic reports from Iraq are concerned with projects establishing essential elements of an infrastructure, especially roads and railways. According to the development allocations of Iraq's Five Year Plan (1976-1980), the expansion of the railway network has been allocated over \$1,420 million whereas aviation projects and new aircraft will receive \$142 and \$213 million respectively.⁴

¹*Flight International*, 30 July 1977, p. 353.

²*Ibid.*, p. 351. Saudia increased its flight frequencies to London from five to seven per week, in direct competition with Gulf Air.

³*Interavia*, 9/1975, p. 971.

⁴*Statistical Review of Middle East Markets* (1976), Table 19.1, p. 105.

Iraqi Airways has kept abreast of its Arab neighbors in the scope of its recent acquisitions, by similarly importing jumbo jets. To train pilots for these and other jets, Iraqi Airways and Saudia have jointly ordered in 1977 six simulators from the British firm, Redifon Flight Simulation. The \$3 million Iraqi order is part of an overall drive to promote the national airlines which has included bulk orders for Boeings and an arrangement with Boeing for extensive managerial assistance at the headquarters in Iraq.¹ Boeing is reputed to have as many as 200 representatives in Baghdad.²

The only other major technical assistance program underway involves another Muslim country, Pakistan. In May 1975 Pakistan International Airlines and Iraqi Airways agreed on manpower exchanges. PIA crews would be sent to Iraqi Airways for technical assistance, and Iraqi personnel would be trained at PIA's base in Karachi.³

Reports indicate that Iraqi Airways has maintained a death-free record for its scheduled services, making it one of the safest of the world's airlines. Since 1960 no deaths have been reported according to the British Civil Aviation Authority's *World Airline Accident Summary*.⁴

KUWAIT AIRWAYS

Kuwait Airways Corporation was founded in 1953 as Kuwait National Airways, adopting the present title in 1958. BOAC took over the technical management in June 1958 and in September 1959 British International Airlines, a wholly owned BOAC subsidiary providing charter and maintenance services, was taken over by Kuwait Airways. Kuwait Airways became wholly owned by the Government on 1 June 1963. Total company employees number over 2000, and the equipment is uniformly Boeing: seven B-707-320Cs and one B-737-200, with three B-747-200 Combis on order. The tiny state has a modern airport whose main runway is 3400 meters, and

¹*The Middle East*, April 1977, pp. 75-76.

²From a memo by Anthony Pascal following discussions with U.S. airline officials, May 1977.

³*ICAO Bulletin*, May 1975, p. 43.

⁴*Destination Disaster*, p. 360.

is equipped with two Plessey Stan 37/38 Instrument landing systems. Kuwait International Airport will open a new \$42 million terminal in 1978; Ballast-Nedam is constructing the terminal under Japanese supervision.¹ Two of the 13 check-in facilities will be for jumbo jets.

Kuwait Airway's growth rate of passengers carried and freight tonnage-kilometers performed surpasses all other Arab airlines except Saudia. The growth of Kuwait Airways--a state-owned company which is run according to private enterprise principles--has been profitable, partly because of advances in productivity. Of all the Arab airlines studied, Kuwait Airways was the most profitable in 1973, registering revenues of \$3340 per hour, \$524 of which were profit.² Compared with 11 companies which use the B-707, Kuwait Airway's maintenance costs (\$224.20 per hour) and direct labor costs (\$28.75 per hour) are below average.³ Profits are also due to the high passenger load factor: 60.5 percent in 1975.

The enormous increase in passengers carried demands a concomitant elevation of technical service ranks, and herein lies Kuwait Airway's major problem. In the maintenance sector the airline employs Pakistanis, Egyptians, and other Middle Eastern nationalities alongside some British and Kuwaitis. Kuwaitization has been slow because of Kuwait Airway's high training standards. There were only 24 Kuwaitis in the 22 three-man cockpit crews in early 1973.⁴

The fleet of Kuwait Airways now has been standardized, thus facilitating work for the maintenance department which, in 1966, had five different aircraft to be serviced. Though indeed there are maintenance benefits from standardization of its fleet, Kuwait Airways must bear the costs attending short-haul services. Perhaps this

¹*Flight International*, 30 July 1977, p. 354.

²*ICAO Digest of Statistics No. 194, Fleet Personnel*.

³The average maintenance costs of 11 companies using the B-707 was \$238.85 per hour, and the average direct labor costs per flying hour was \$36.97. *Interavia*, 3/1973, p. 250.

⁴*Interavia*, 3/1973, p. 250. Kuwait Airways requires 5000 hours experience before a first officer is promoted to the rank of captain.

accounts for the recent discussions (March 1977) held in Kuwait. Finance Ministers from Kuwait, Saudi Arabia, Bahrain, and the United Arab Emirates met to discuss the merging of their two companies-- Gulf Air and Kuwait Airways--to form a consolidated company.¹ Since the two airlines' routes almost directly overlap, a merger would offer considerable economies and a means of streamlining operations. The March meeting resulted in a decision to set up a joint civil aviation council for the Gulf, which would embark on a closer examination of the Gulf Air-Kuwait Airways merger question.²

MIDDLE EAST AIRLINES AIR LIBAN SAL

Middle East Airlines (MEA) was founded in 1945 when it began operations. In November 1965 Air Liban was merged with the airline thus giving the company its present name. In 1969 MEA took over Lebanese International Airways, originally founded by Christians as a rival to MEA. Major shareholders in MEA are Intra Investment Company (65 percent) and Air France (30 percent). Equipment currently includes three B-747-200s, 14 B-720s, and 23 B-707s. The company employs 5256, including 268 pilots. Beirut International Airport has two 3300 meter runways. A rival airfield, the Christian-built Pierre Gemayel International Airport is near completion in Hamat. This airport has a 1900 meter runway, but there are plans to expand the runway to enable jumbo jets to land.³

¹JPRS *Translations on Near East and North Africa*, No. 1657, 23 May 1977, p. 56. Originally from *Al-Ra'y Al-'Amm*, 21 March 1977, p. 7. Also see *The Middle East*, May 1977, pp. 95, 98.

²*The Middle East*, May 1977, pp. 95, 98.

³The Hamat Airport is an outgrowth of the recent civil war, and a byproduct of what Christian (Falange) forces perceive as a military necessity. The thought of building a second major airport outside Beirut dates back to 1965, when Beirut Airport was threatening a vast housing area with pollution and noise. The Hamat Airport may assuage difficulties of the overtaxed Beirut Airport, as transportation privileges could be distributed between the two facilities. Hamat Airport will probably stimulate North Lebanon's economy, complementing the port of Tripoli and the large industrial complex of al-Batrun.

MEA is the largest non-government employer in Lebanon, and generates five percent of the country's national income. It was considered to be one of the world's most profitable international carriers before the civil war.¹ In 1972 its earnings equalled 10.3 percent of revenues and its income increased by 14.9 percent over 1971-1972. However, since the internecine hostilities erupted in the summer of 1975, the company has suffered severe losses since services were continually halted. During the first two-thirds of 1976, a loss of \$18 million was incurred. MEA lost an estimated \$20 million during the civil strife, 1975-1976.²

During the war no overnight stops were allowed at Beirut airport because of risks involved. Many MEA aircraft were leased to other carriers during the civil war, and are now being brought back into use. Some of the B-707s were used as tankers to transport fuel from Amman and Turkey to replenish supplies at Beirut. As of late 1975, MEA was flying at a load factor of 40 percent (breakeven is 43 percent), and the MEA staff of 4000 at Beirut was working at only 30 percent capacity. More recently, load factors on some routes are already reaching 90 percent.³

Before the civil war, high productivity was a salient characteristic of MEA's operations. MEA employs about four and a half crews per aircraft and insists on aircrew-trained men for many administrative posts. One-week technical refresher courses are completed by each crew every year.

Revenues and profits before the civil war were high. In 1971 earnings were 7 percent of revenues and in 1972 10.3 percent of revenues. During these two years income increased by 14.9 percent.⁴

¹The most recent Lebanese civil war erupted in the summer of 1975 and continued through 1976. The war, predominantly political, has taken on religious overtones. Hence the warring parties are generally labelled as Christian Rightists and Palestinian Leftists.

²*Flight International*, 30 July 1977, p. 351.

³*Ibid.*

⁴*Interavia*, 6/1974, p. 534.

In 1974 a \$14 million profit was registered.¹ These substantial revenues and earnings of the pre-civil war period were boosted by a marketing program known as the *Asna formula* (after its originator, Asad Nasir, general manager of MEA). The impact of equipment decisions upon revenues and earnings is computed with the available input of data on the airline's operations. It is also possible to predict the number of passengers to be carried in the target year, and to determine the most economical deployment of the existing fleet.²

In early 1975, two 747-sized hangars were under construction at Beirut airport at a cost of \$2.5 million. These would allow MEA to maintain its own 747s and also to undertake a larger proportion of work for customers. In 1975, almost half of its annual 1,500,000 maintenance base man-hours of engineering were sold to outside customers. Existing facilities allow engine maintenance, sheet-metal and upholstery work, electronics, and instruments and systems maintenance.

In addition, MEA is involved in part of its own design and manufacture. Galley equipment, seating, furnishing, all in-home general purpose test consoles, and maintenance docks for the 707s were designed and made at the MEA facilities. In this respect, MEA is the most self-reliant Arab airline, and even Lockheed and Boeing have approached MEA with proposals involving subcontract manufacture.

MEA greatly benefits from the Civil Aviation Safety Centre in Beirut. Courses are advanced and cover airmanship, airport operations and services, accident prevention, search and rescue, and engineering [See Section II]. But reliance on outside technical support is still necessary: Air France, British Airways (British Engine Overhaul Ltd., a subsidiary), and Sabena handle component repair and overhaul.³

¹ *Aviation Week and Space Technology*, 4 October 1976, p. 29.

² *Flight International*, 30 July 1977, p. 351.

³ *The Middle East*, December 1976, p. 97.

SAUDIA

Saudi Arabian Airlines Corporation (Saudia) was founded in 1945 by the Government of Saudi Arabia and in 1947 began operations. Its operating equipment is varied and sophisticated: two TriStar-1s, three TriStar-100s, one TriStar-200 (with three on order), twelve B-707-320Cs (two on lease from MEA), two B-720s, two DC-8-63CFs (on lease from Seaboard World), fourteen B-737-200s, two 737-200Cs, three F-27s (on lease from Hughes Air West), three DC-3s, two Gulfstream IIs (with two on order), two King Airs, two Cessna 421Bs, and two Apache 235s.

Total company employees number over 10,500, 351 of whom are flight crew.¹ In early 1975, Saudia was reported to have 170 pilots (120 of whom were Saudi nationals) and 70 senior captains (50 of whom were Saudis).² Saudi Arabia has three airport runways over 3660 meters. Under the current Five Year Plan, \$3.5 billion has been allocated to airport development. Work on a new \$280 million Jeddah International Airport was to begin in mid-1974, and was to be completed in 1979. Because of competition for labor and building materials elsewhere in Saudi Arabia, the new Jeddah airport may not be ready until 1981.³ The new airport will have two 3300 meter runways, stands for up to forty-seven B-747s, and a maintenance and overhaul base for Saudia.⁴

Consideration is also being given to a new airport at Riyadh. Bechtel, Inc., completed the master plan for the new facility and is in the midst of engineering design. The project is expected to be started in mid-1978.⁵ Currently, at peak times, an aircraft lands or takes off from Riyadh airport every two minutes. Used by not only Saudia but Royal Saudi Air Force trainers and executive aircraft as well (most of the royal palaces are at Riyadh, not Jeddah), Riyadh suffers from major air traffic congestion even though its new terminal was opened in 1975. The new airport at Riyadh will have two

¹ *World Aviation Directory*, Fall 1976, No. 73.

² *The New York Times*, 26 January 1975.

³ *Aviation Week and Space Technology*, 29 March 1976, p. 34.

⁴ *Flight International*, 30 July 1977, p. 354.

⁵ JPRS *Translations on Near East and North Africa*, 15 August 1977, No. 1693, p. 48. Originally from *Al Riyadh*, 4 July 1977, p. 2.

parallel 4200 meter runways. In addition to the new airports being built at Jeddah, Riyadh, and Dhahran, 12 more airports are to have their runways extended to permit the operation of larger planes, such as the B-737 and B-747.¹

Saudia has been growing at a rate of about 50 percent a year since 1973. Air freight revenues were 52 percent higher in 1974 than in 1973; passenger revenues were 51 percent higher.² Saudia forecast a 50 percent growth in the number of passengers carried in 1976 over those carried in 1975.³ 1975 represented a growth of almost 100 percent over 1973 in passengers carried.⁴ This passenger growth has bestowed upon Saudia one of the highest passenger load factors among Arab airlines: 62.9 percent. Moreover, this load factor is deceptively low, for Saudia's major intraregional and international routes have load factors ranging in the 90 percent area. The high passenger load factors represent increasing demand, but they also indicate the airline's failure to meet this demand.

Saudia recorded a net profit of \$7.5 million in 1974, but with operating expenses climbing at an estimated rate of 35-40 percent a year, a sharp earnings decline was anticipated for 1975. According to the Saudia annual report of 1975, an operating loss of over \$6 million was registered.

Saudia has a long-standing relationship with Trans World Airlines which has provided management services since 1966 and technical assistance of even longer duration, since 1964. A TWA executive serves directly under Saudia's Director General. By the end of 1975 there were some 500 TWA personnel in Saudia's management, operations, marketing, flight crew, and flight training.⁵ About 2000 other

¹JPRS *Translations on Near East and North Africa*, No. 1693, 15 August 1977, p. 48. Originally from *Al Riyadh*, 4 July 1977, p. 2.

²*Aviation Week and Space Technology*, 29 March 1976, p. 32.

³*Aviation Week and Space Technology*, 22 March 1976, p. 34.

⁴See Appendix 1 of this paper.

⁵The *London Times*, 15 September 1975.

(non-TWA) foreigners from diverse locations were employed by Saudia in late 1975. This number has certainly risen in the last two years.¹

The infusion of foreign technical and managerial personnel has been required in order to meet the burgeoning growth of passengers. A plan to Saudiize the airline has thus proven difficult to implement since the sheer rate of growth has outstripped the ability to train Saudi nationals. Saudi nationals head the finance, marketing, administrative, and legal departments. One source says that neither the government, the Saudi Board of Directors nor individual Saudis show much interest in the technical functions.² But perhaps the TWA relationship with Saudia has created its own momentum, making TWA somewhat reluctant to train Saudis to replace its own personnel.

As with Alia, training receives high priority. In 1968 Saudia began an air-cadet education program for careers in the airline. Forty are admitted each year. After first completing a two-year curriculum to finish their high school education, the cadets then receive special training while working in various positions in the airline. Some 500 employees are reported to be taking evening courses.³ Some Saudi trainees are sent to American universities or training institutes, most often the Spartan School of Aeronautics in Tulsa, Embry-Riddle Aeronautical University in Daytona Beach, Florida, and the University of Kansas in Lawrence, Kansas.⁴ TWA in Kansas City trains Saudia pilots for the B-747. Beirut's Civil Aviation Safety Centre [See Section II] trains B-707 pilots, and the Aer Lingus

¹Of these non-nationals, some are employed as stewardesses. Saudia does not recruit stewardesses locally because of social custom. Most female cabin attendants come from the Lebanon.

²Notes from a conversation between Anthony Pascal and an official of TWA, in May 1977.

³*Aviation Week and Space Technology*, 29 March 1976, p. 32.

⁴Anthony Pascal notes, op. cit.

flight simulator in Dublin trains pilots for the B-737s. As a direct result of this training at domestic and international centers, all TriStar captains are Saudis. Over 50 percent of the captains and first officers assigned to the B-707 and B-737 are Saudis, but only 30 percent (3 out of 10) of the TriStar flight engineers on active duty are Saudis.

Besides TWA, Saudia has ties with British Airways, ArabAir Services, Sabena, Lockheed, and International Aeradio. British Airways is carrying out major maintenance on Saudia's TriStars (the L-1011s have Rolls Royce RB211 Engines) at its engineering base in Britain. ArabAir Services received its largest contract, of \$5 million, to work with Lockheed for computerized management of Hadj pilgrimage traffic into Jeddah Airport.¹ Sabena has been contracted for the major overhaul work on the B-707.²

The peak traffic of 500,000 Hadj pilgrims (over 100,000 of whom Saudia carried in 1976) passing through Jeddah in a four-week period each year (the world's largest annual traffic bulge) poses problems of air-traffic-control and ramp parking space for aircraft and ground transportation. During this month-long period, load factors on flights between Riyadh and Amman and Cairo reach nearly 100 percent. To help alleviate this problem, Lockheed was awarded a \$650 million contract in 1976 for the development and installation of a new air-traffic-control system. Nav aids are being supplied by ITT Federal Electric, the ILS installations by SEL of Germany, and the high-frequency communications equipment by Collins.³

In September 1976 International Aeradio was awarded a \$30 million contract for development of technical manpower for Saudia. A new training center in Jeddah is to be built to accommodate a total of

¹ *Aviation Week and Space Technology*, 6 June 1977, p. 328.

² *Ibid.*, 29 March, p. 34.

³ *Flight International*, 30 July 1977, p. 351.

230 students who will be trained to internationally accepted standards. Courses will cover telecommunications, radio navigation, radio and radar engineering, and airfield lighting.¹

In the early 1970s, international flights rapidly replaced the dominant position of domestic flights in Saudia's routing. Saudia management has expressed a desire to overtake Beirut as the Middle Eastern center from which most business trips begin, and has developed ambitious plans for diversifying its air routes. It is negotiating with Japan over the possibility of extending its east-bound routes beyond Bombay, and flying to Kuala Lumpur, Manila, and Tokyo. It also has hopes of a transatlantic route to New York, and eventually to Los Angeles and Houston.²

One possible interference with the above planned developments will be the inadequacy of the communication system throughout Saudi Arabia. In conjunction with British Airways, Saudia plans to introduce a computerized reservations system.³ (Ticketing and passenger check-in procedures are still handled manually so that bedlam usually reigns as passengers compete for space on flights.) Saudi Arabia's current Five Year Plan comments, "the Kingdom's entire communications network [must] be upgraded before a new airline reservations system can be implemented."⁴

Other problems are the shortage of management skill, the long time required to train technicians, the low status accorded mechanical labor in Saudi Arabia, and the housing of foreign personnel. There is no problem recruiting foreign personnel, but the serious housing shortage has forced a number of technicians and managers to live in hotel rooms. Many recruits cut short their stay in Saudi Arabia because of the poor living conditions.⁵

¹ *Aviation Week and Space Technology*, 4 October 1976, p. 15.

² *Ibid.*, 29 March 1976, p. 32.

³ The Kuwait-based Arab Fund for Economic and Social Development will contribute \$20 million toward financing an electronic passenger reservations system for the Arab airlines. *The Middle East Economic Digest*, 7 April 1977.

⁴ Saudi Arabia Five Year Plan, 1975-1980.

⁵ *Aviation Week and Space Technology*, 29 March 1976, p. 32.

Despite the booming business, possible overextension, and strain on its system, Saudia has maintained a clean safety record and a high standard of technical reliability. Only one accident has been reported in Saudia's 32-year history.

Table 1

SAUDIA'S GROWTH TRENDS

	<u>1969</u>	<u>1974-75</u>	(Estimates) <u>1979-80</u>
Jet fleet	4	18	33
Propeller fleet	21	4	1
Saudia employees	3944	5126	10,545 ^a
Civil Aviation Dept. employees	b	2116	8573

SOURCE: Saudi Arabia Five Year Plan, 1975-1980, Central Planning Organization, Kingdom of Saudi Arabia

^a*World Aviation Directory*, Fall 1976, No. 73, already puts the number of Saudia employees in 1976 at 10,603.

^bNot available.

SYRIAN ARAB AIRLINES

Syrian Arab Airlines (Syrianair) is the smallest operation studied. In 1975 total domestic and international flight passengers numbered only 341,087. Syrianair's equipment includes two B-747-SPs, three B-727-200s, four Super Caravelle 10B.3s, two Falcon 20s, and two DC-6Bs. Damascus International Airport has one runway over 3300 meters and one 2700 meters. Aleppo has an airfield with a 2870 meter runway capable of handling non-wide-bodied jets. In November 1975 Syria granted Paris Airport Authority a \$400,000 contract for

definition studies of a new terminal building at Damascus Airport which has since been completed.¹ The air-traffic-control center is equipped with a Thomson-CSF long-range radar, and navaid orders are expected in the near future.²

A new airport servicing the Latakia region (the coastal area) has recently opened. On August 2, 1976, three scheduled flights per week began operating between Damascus and Latakia. This service connects the capital with the Mediterranean coast, and thus with the port of Aqaba. The airport has received administrative and technical equipment necessary for navigational support, but the airport is not equipped to receive jumbo jets.³

Syrian graduates from the Royal Jordanian Air Academy will eventually provide Syrian Arab Airlines with needed manpower. In 1976 only seven Academy graduates were from Syria though the number enrolled will probably increase in the near future.

TRANS MEDITERRANEAN AIRWAYS

Trans Mediterranean Airways (TMA) is a scheduled all-cargo carrier based in Beirut. It was formed in 1953 and for six years operated as a non-scheduled airline. In 1959 it was certificated as a scheduled all-cargo carrier. TMA's route network is entirely international with scheduled cargo services providing links between Europe, the Middle East, Southeast Asia, the Far East, and the United States. The fleet consists of nine B-707-320Cs (with three more on order). The company employs 1912, 160 of whom are pilots.

The International Civil Aviation Organization cited TMA as one of the fastest growing airlines of the decade.⁴ This is suggested by the accelerated pace of its cargo growth: In 1971 TMA performed

¹ *Aviation Week and Space Technology*, 1 December 1975, p. 28.

² *Flight International*, 30 July 1977, p. 354.

³ JPRS *Translations on Near East and North Africa*, No. 1578, 3 November 1976, p. 176. Originally from *Al-Thawrah*, 7 July 1976, p. 4.

⁴ *The Middle East*, December 1976, p. 97.

167,002 ton-kilometers, and in 1975 performed 435,853 ton-kilometers.¹ However, the Lebanese civil war severely disrupted the all-cargo services, forcing the sale of both the airline's B-747-100Fs. In a recent show of confidence, TMA purchased over \$400,000 of new ground-handling equipment. It will take time to work up to the pre-civil war load factors, but higher frequency available from the B-707-320Cs has already pushed the available capacity of outbound loads up from 10 percent to 28 percent.²

TMA was more fortunate than MEA during the civil war. Being a cargo line with a relatively small staff, TMA could shift its staff to neighboring states. TMA first moved its staff to Cyprus, and later reorganized from Dubai. This flexibility enabled TMA to record a profit for 1976, when MEA in comparison lost over \$18 million. It is also probable that TMA profited to some extent from the demand for logistical support during the war. With the cessation of hostilities has come a return to the home base in Beirut; personnel no longer commute to Beirut airport by air.³

¹*World Air Transport Statistics*, 1971 and 1975.

²*Flight International*, 30 July 1977, p. 351.

³John Andrews, "National Airlines Kept Flying--But Elsewhere," *International Herald Tribune*, November 1977 (Special Supplement), p. 38.

V. CONCLUSIONS

TECHNOLOGICAL TRANSFUSION

Developing regions do not manufacture modern civil aircraft, and the technological sophistication and economic setting appropriate for such manufacture will not be available in the Arab East in the foreseeable future.¹ It has been an economic imperative for the Arab states to import airplanes for their fleets, and to acquire through purchase the latest technology necessary for air-traffic-control.² The jets and radar equipment, as well as the numerous managerial and technical personnel brought into the Arab world, have helped to keep air transport within the region vibrant and contemporary with Western developments in aviation and avionics. Technology transfusion is thus defined as the process of energizing an economic sector which, because of limits to local industrialization and shifted economic priorities, would otherwise be unable to keep pace with the West. For the airline sector the process involves the international transfer under grant, credit, or cash of commercial sales of civilian aircraft, including parts, support equipment, and the training and technical services necessary for their use and maintenance.

This extensive transfer of aviation products and personnel has enabled the Middle East to become the world's fastest growing air transport region, according to the International Civil Aviation Organization. In contrast to an average of 2 percent world airline traffic growth annually, a number of Arab airlines are growing dynamically, Saudia as much as 40 percent annually. The 1975-1976

¹However, the manufacture of modern *military* aircraft is in the planning stages. Jet planes, missile systems, and vehicles are to be built in Cairo by the Arab Organization for Industrialization, a consortium established in 1975 by Egypt, Saudi Arabia, the United Arab Emirates, and Qatar. Joint venture contracts with Western firms will contribute to the long-range goal of creating an industrialized base in the Arab world.

²Even Air France, an airline within a state manufacturing civil aircraft of its own, has turned to Boeing for purchase of 12 B-737s to replace its aging Caravelles. Air France's \$100 million loss both in 1976 and in 1977 induced the government to yield and sanction the purchase. *The Los Angeles Times*, 14 January 1978.

growth rate for scheduled passenger and cargo service for the Middle East (including Israel) exceeded 25 percent. Projected orders for 1976-1980 are between \$500 and \$900 million, of which 90 percent may be American equipment and services.¹ The planned civil aviation expenditure of the Saudis alone for the period mid-1973 to mid-1976 amounted to \$500 million.

The success with which Western aircraft manufacturers have marketed their products in the Arab world can be ascertained by analyzing the components of the various fleets. Having its "moment" in the Arab East, Boeing has sold the greatest number of aircraft in the region; all the airlines under consideration have at least some Boeing aircraft. Alia, Kuwait Airways, MEA, and TMA are all-Boeing; Egyptair, Iraqi Airways, Saudia, and Syrian Arab Airlines maintain largely Boeing fleets. The other aircraft prominent in Arab fleets are manufactured by Lockheed. Lockheed TriStars (wide-bodied jets) have been sold to Saudia and Gulf Air. McDonnell Douglas has yet to secure a single order for wide-bodied jets.

The above acquisitions represent a change from 1950-1970, when Arab fleets were largely made up of European products (Caravelle, Comet, and Trident). The transition from European-built to American-built aircraft has been the dominant trend, with Egyptair deviating somewhat from it. Egyptair, having purchased on credit eight Tupolev-154s from the Soviet Union and subsequently returning them, moved from a Soviet-built fleet to an American-built fleet.

Wide-bodied jets now constitute about one-quarter of all Arab aircraft servicing passengers (not all-cargo TMA). Most of these large jets have been purchased following the oil-crisis boom of 1973.² Other than purely economic factors have led Arab airlines to select

¹ *ArabAir*, an information brochure published by ArabAir Services, Ltd., 1977.

² The dramatic increase in the purchasing power of oil-rich Arab states can best be illustrated by noting the leap in price per barrel of Persian Gulf oil: \$2.39 (1953), \$3.01 (1973), \$5.11 (October 1973), \$11.65 (early 1974). *The Christian Science Monitor*, 26 October 1977.

the latest in aircraft design. As with "status" weapons, the jumbo jets have been purchased for reasons of prestige as well as of economic viability. Both high technology weapons and wide-bodied aircraft are often inappropriate to the support capabilities of recipient countries. The B-707 still outnumbers wide-bodied jets in the Arab East, however, by a factor of almost three to one (68:24).

To accommodate the newly-purchased jumbo jets, Arab states have had to upgrade and extend the runways of their major airports. Iraq, Syria, and Kuwait each have one runway capable of handling the large jets (over 3300 meters long); Egypt, Bahrain, Jordan, and Lebanon have two such runways each (Lebanon has the immediate capacity for a third at Hamat); and Saudi Arabia now has three such runways.

The airlines' transition to international stature after being merely regional feeder operations has necessitated not only extra-length runways but also new or enlarged airports fully equipped with modern air-traffic-control systems. Major new airports are being built near Amman, Jordan; Hamat, Lebanon;¹ and Jeddah, Saudi Arabia. Egypt and Saudi Arabia are extensively renovating a dozen airports each. Beirut airport will be undergoing repair soon, having been damaged by the recent civil war. In addition, a \$150 million expansion of Beirut airport is planned.²

In addition to these new airports scheduled to be built, other construction has been underway or is planned for most Arab airports. These recent construction projects have been outlined on the next page, and where information is available, attendant radar systems are noted.

¹The Pierre Gemayel International Airport nearing completion in Hamat, Lebanon, has been supplied with free equipment and material by Christian financiers. This equipment includes American and Belgian radio and navigation technology. *The Los Angeles Times*, 25 June 1977, pp. 14-15.

²Repair and development of Beirut airport has been made possible by a loan of \$28 million granted by the Kuwait Fund for Economic Development. *L'Orient-Le Jour*, 13 August 1977. Also see *The International Herald Tribune*, Special Report on Lebanon, November 1977.

<u>New Terminal Buildings</u>	<u>New Air-Traffic-Control Systems or Centers</u>	<u>New Radar Systems</u>
Cairo airport: new terminal building to be completed soon	Cairo airport: new control tower to be completed soon	Kuwait and Cairo airports: equipped with Plessay Stan 37/38 instrument landing systems
Damascus airport: new terminal building has been completed	Jeddah airport: new air-traffic-control system has been commissioned	Damascus airport: equipped with a Thomson-CSF [French] long-range radar; navaid orders expected in the near future
Kuwait airport: new terminal building to open in 1978	Bahrain airport: new air-traffic-control tower likely to be commissioned soon	Baghdad airport: new Selenia [Italian] long-range radar to be commissioned soon
Riyadh airport: a new terminal building opened in 1975		Bahrain airport: new radar has been commissioned

Capital investment in the structures and in the technological acquisitions outlined above represent a significant portion of Arab states' allocations for air transport development. However, these tangible products of massive investment would not have been possible were it not for the managerial talent and technicians secured to oversee and assist in the accelerated growth of certain Arab airlines. For Saudia, Kuwait Airways, and Gulf Air in particular, these foreign inputs have been vital elements in the maintenance of sustained growth.

Saudia has been sustained by technical assistance from TWA since 1964, and by managerial assistance since 1966. Though all B-747 pilots are Saudis, only 30 percent of the flight engineers on active duty are Saudis. Similarly, extra-nationals are employed in half of the captain and officer positions for the B-707 and B-737. At the end of 1975, Saudia employed 500 personnel recruited from TWA in addition to 2000 other extra-nationals.

Many of these extra-nationals were employed in technical servicing. British Airways maintains Saudia's TriStars and Sabena does major overhaul work on the B-707s. Recognizing the need for trained personnel of Saudi origin, Saudia concluded a \$30 million contract with the British-based International Aeradio in September 1976 for the development of its technical manpower. Until such personnel are trained, Saudia will continue to rely heavily on foreign assistance.

Kuwait Airways has also been characterized by substantial reliance on foreign assistance: In early 1973 only 36 percent of the cockpit crews were Kuwaitis. Similarly, Gulf Air is a large employer of Western workers. International Aeradio maintains Gulf Air's avionics equipment, while British Airways trains the crews for Gulf Air's jumbo jets and is responsible for their upkeep.

Middle East Airlines and Alia, on the other hand, have grown steadily, and have avoided extensive reliance upon foreign assistance for fleet staffing and maintenance. Both employ largely native work forces and fall back on foreign expertise for overhaul. MEA does rely somewhat on British Airways, Air France, and Sabena for component repair and overhaul; Lufthansa and SNECMA are under contract to provide Alia's major overhaul needs.¹ Alia has benefitted from its small-scale relationship with Pan Am which has provided support and advice in administration.

Statistics for foreign personnel employed by the three smaller Arab airlines--Egyptair, Iraqi Airways, and Syrianair--are not available. These airlines serve Arab states that have not chosen to promote technical exchanges with the West until quite recently. Their political environments have precluded such contacts and have instead fostered relationships with the Soviet Union. Egyptian reliance on the Soviets for maintenance and overhaul appears to have been extensive. But this situation is gradually changing.

¹One airline official from the Gulf sector stated that the majority of Arab carriers still ship their jet engines to SNECMA in France for major overhaul. *Aviation Week and Space Technology*, 28 November 1977, p. 26.

Egyptair abruptly terminated the use of its Soviet-built aircraft after acute difficulties arising from Tupolev-154 defects.¹ In addition, relations between Soviet and Egyptian technicians appear to have been less than cordial. One reason for Egypt's break with the Soviet Union in 1972 was the failure of Moscow to send spare parts to repair aircraft, both military and civilian. The break has forced Egypt to either seek new and more reliable sources of supply for spare parts or to purchase altogether new avionics and aircraft systems. Which path will be taken is not yet clear, but Boeing aircraft have already been purchased, and in the near future, administrative and technical responsibilities may be transferred to Boeing. There are indications that Lockheed may assume responsibilities connected with Egyptair's cargo services. Lockheed Aircraft Services has been discussing with Egyptair the possibility of a joint venture to provide air cargo service within Egypt.

Definite arrangements of the sort which may be made between Boeing and Egyptair have already been made with Iraqi Airways. Supplementing the recent purchase of Boeings by Iraqi Airways is an extensive managerial assistance program in Baghdad. Moreover, under the auspices of Iraqi Airways, 311 Iraqis, perhaps the largest single civilian group of Arab students in America, have been studying at an American aviation training institution. The Iraqis are studying instruments and electronics as well as aircraft and power plant mechanics.²

ABSORPTIVE CAPACITIES

Having to send Arab students abroad en masse indicates a lack of opportunities for local civil aviation training. Well-established

¹ Egyptair is not alone in experiencing difficulties with the Russian-made jets. On 2 December 1977 another Tu-154, belonging to Balkan Airlines, crashed while attempting a forced landing. Meccan pilgrims were aboard.

² Notes from interviews, 17 May 1977. It should be noted that 9 Syrians, 8 Kuwaitis, and 20 Saudis were also enrolled in the Spring semester 1977, at that institution, only one of several in the U.S. engaged in such training.

programs exist only in Beirut, Lebanon, and Amman, Jordan. In Beirut the Civil Aviation Safety Centre accommodates about 70-80 students from the region each year. It is equipped with a simulator and engineering training equipment [See Section II].

The Arab world's only comprehensive civil aviation training takes place in Amman at the Royal Jordanian Air Academy (RJAA), established in 1968. A recently completed training center at Amman airport will complement the RJAA by offering simulated B-727 training. Because of these aviation institutions, Alia nears self-sufficiency: Only 10 percent of Alia's pilots are extra-nationals, and all copilots and flight engineers and stewardesses are Jordanian.

Partly to relieve the pressing need of Arab countries less developed aeronautically, the Civil Aviation Council of Arab States has undertaken a project to establish an Air University for the Arab world. Amman is a likely site, and Alia and Jordan have expressed their willingness to expand the RJAA so that it will be the nucleus for the Air University. But until this university is fully realized, most Arab airlines will have to rely upon institutions outside the region for technical training.¹

An important element in aviation training is access to simulators. The number of simulators available to Arab students for flight training is small. The training centre at Amman airport has been provided with a simulator training facility for the B-727. The only other simulator is at Beirut's Civil Aviation Safety Centre. The situation is changing, however, as six simulators were ordered in 1977 by Iraqi Airways and Saudia. But flight students have and will continue to receive simulated experience outside the region. Under exchange programs Arab flight students are trained in simulators located abroad, especially in the United States and in Britain.

¹ It is certain that Arab air force training programs provide certain Arab airlines with trained personnel. This military to civilian spillover will not be dealt with here.

Lebanon and Jordan, the two countries with training centers for crews and technicians, coincidentally have maintained enduring relationships with the West, and economic, political, and cultural ties unbroken by coups or military regimes since World War II. In many ways, the Jordanian and Lebanese colonial heritages have facilitated the absorption of advanced technology, including civil aviation equipment.

As active patrons of parochial schools and institutions for higher education in Lebanon and Jordan during the past 100 years, France, Britain, and the United States have assisted in the modernizing, and often Westernizing, process. Problems of language are therefore not as profound as in other Arab countries. By contrast, Saudi Arabia and the Gulf riparians, which fell outside the radius of concerted British and French cultural penetration, have only recently begun to incorporate technical and language studies into their school systems. Having the money to send their students to England and America, oil-producing nations only reluctantly accept local replacements. This fact helps to explain the difficulties which the Arab Air Carriers Organization and the Civil Aviation Council of Arab States have encountered in their attempts to set up a Pan Arab Air University.

For Saudi Arabia and the Gulf states it will be several years before problems of language in technical education are overcome, but progress is being made. In September 1975 the British Council began to supply King Abdul Aziz University at Jeddah with teachers, administrators, and consultants from Britain. They will coordinate programs of intensive English to prime about 300 students proceeding to medical and engineering careers. By 1977 the number of students reached 700, and the British Council involvement in the turnkey operation was to be phased out.¹

¹*The Times Higher Education Supplement*, 21.10.77, p VI.

Colonial ties have also strengthened Lebanon and Jordan's communications networks and transport services, both essential elements of national infrastructures. Many cooperative relationships still persist, and joint ownerships in business and trade are not uncommon. Where the airline company is partly owned by outside stockholders as in the case of MEA (Air France owns 30 percent), tendencies for profitable and steady growth would seem to be reinforced.

Taking the above factors into consideration, Alia, MEA, and TMA appear to have the greatest capacities for absorbing new aircraft and for training requisite personnel. Growth has been steady, native institutions have provided for language and vocational training and have been instrumental in producing flight personnel, and incentives from abroad for technical and financial support have been plentiful. Apart from Lebanon and Jordan, other Arab countries' air transport growth will be retarded by the inadequacy of infrastructures in some airports and by the slow growth of technical and administrative expertise. Problems of political continuity, shortages of trained personnel, and diversions of resources to the military have been particularly profound in Egypt, Syria, and Iraq. Saudia and Kuwait Airways are growing far too quickly for their support capacities, and essential reliance on Western expertise in management, training, and overhaul will continue to grow.

In the body of this paper, available information on "time reliability" and "technical reliability" have been furnished in an effort to help assess comparative absorptive capacities. Safety records have also been mentioned. But in themselves, these statistics are inconclusive and often misleading for many reasons.¹ For example, Alia is reported to have a high standard of "technical reliability," yet it is ranked in the "least safe" category of one study. Equally difficult to explain is Iraqi Airways' death-free flight record.

¹In particular, airline mishaps are not always reported, the achievements of airlines are made public while setbacks are not divulged, and contracts for technical and managerial services often fail to appear in the published sources.

With respect to Saudia and Egyptair, however, these statistics appear to concur with information previously obtained. The former has a clean safety record and is reported to have a high standard of "technical reliability." Egyptair, on the other hand, has poor "time reliability" and ranks as one of the world's "least safe" airlines.

ECONOMIC PROSPECTS AND POLITICAL IMPLICATIONS

The recent growth of civil aviation in the Arab world will contribute to the accelerated development of national and regional infrastructures. Even before the phases of consolidation and standardization of fleets are complete, the resident airlines will foster economic and social integration in the region by transferring technically trained, skilled manpower--foreign and indigenous--to locations of need. This contrasts with the historical evolution of aviation in the West where industrial development preceded substantial airline growth. A number of Arab states have been building their aviation sectors as integral parts of their developing industrial economies; the airlines are indispensable to their rapid growth. The sources of this growth have been changing.

By 1975, sources of technology transfer in Egypt in most sectors had shifted from the Soviet Union to France, Britain, and the United States. In 1975, Kuwait's principal suppliers became the United States and Britain. Similarly, from 1970-1975 British firms were the primary suppliers of technology to Qatar and Abu Dhabi.¹ Saudi Arabia has long been the client of the United States, and Lebanon has been a Western preserve since its creation. Only Syria and Iraq are Soviet clients, and this paper explains that even in Iraq, recent cooperation with Boeing indicates a turn to the West for technological know-how, a turn that may have parallels in other developing sectors of the Iraqi economy.

¹See Analytical Overview, *Technology Transfer To The Middle East O.P.E.C. Nations And Egypt 1970-1975*, September 1976.

The oil-rich and the oil-deprived, the conservative monarchists and the radical socialists are turning to the West in the aviation sector, among other sectors, primarily for sound economic reasons. The profit motive and the desire for efficiency in operations have attracted both the privately-owned and the state-owned airlines to Western management and marketing techniques. The airlines as an industry are particularly vulnerable to competition, and, furthermore, isolation or divergence from regional operational norms would tend to bankrupt an airline.

When profitable, airlines bolster national economies by contributing to hard currency earnings and by employing thousands of workers.¹ Alia, for example, contributed over \$40 million in hard currency to Jordan's balance of payments in 1975.² MEA is the largest non-government employer in Lebanon, generating 5 percent of the country's national income, and playing a major role in servicing traffic to and from the oil-rich regions. Government-owned Saudia registered profits in 1974 which totalled \$7.5 million.³ Saudia's annual participation in the transportation of regional Hadj pilgrims contributes to increased sources of revenues for businessmen in the Mecca area.

Unprofitable Egyptair which has been a burden to the Egyptian state economy has been appealing for changes in its legal status. The Director of the Egyptian Aviation Organization, General Nabih Hashad, has prepared a draft bill for Sadat that would convert his organization into a company. This measure would subject Egyptair to international competition and cause the company to carry the foreign loans and their interest. The effect would be beneficial because salaries of skilled engineers, stewards, and stewardesses

¹ American workers in the industry also benefit from the increasing demand for new aircraft. The slump which Western civil aircraft manufacturers experienced after the oil crisis was partly relieved by Arab purchases.

² JPRS *Translations on Near East and North Africa*, No. 1684, 28 July 1977, p. 62. Originally from *Al-Dustur*, 25 May 1977, p. 12.

³ *The New York Times*, 26 January 1975.

would be raised, and at the same time extraneous personnel would be dismissed.¹ This switch from civil service status would help to halt the outward flow of trained personnel from Egyptair. Whether or not the bill fits into Sadat's overall policy of *infitah* (see p. 17) remains to be seen.

Syrian Arab Airlines, also emplanted in an economic system oriented to the public sector, is undergoing administrative transformation dictated by the state. By order of the Syrian Prime Minister, the board of directors of Syrianair was dissolved on 19 September 1977. A "Working Committee" would provisionally run the airline, and an "Investigating Committee" was believed to be looking into the 1976 purchase of two B-747s and one B-727.² What prompted the purge is not known, but perhaps, in contrast to Egyptair and Iraqi Airways, increasing reliance on Boeing is now considered politically reprehensible. Syria's dependence on the Soviet Union will contribute to Syrianair's vulnerability in the face of airline expansion by the oil-wealthy states, and may even lead to the airline's partial eclipse in the region.

Syrianair's acquisition of the jumbo jets mentioned above was made partly on economic grounds, but factors of status may have influenced the purchase as well. The airline sector distinguishes itself from other sectors in the infrastructure because of its symbolic, visible character. As an increment, each jumbo jet, each modern "international" airport, and the latest in radar technology suggest civil economic capabilities, just as sophisticated supersonic fighters, jet bombers, and advanced radar systems seem to represent military capabilities. But endowing a country with sophisticated aircraft does not ensure new industrial and agricultural activity and may lead to possible overextension.³

¹JPRS *Translations on Near East and North Africa*, No. 1717, 14 October 1977, p. 12. Originally from *Al-Musawwar*, 19 August 1977.

²Agence France Press, noted in *Arab Report and Record*, 16-30 September 1977, p. 799.

³For the multiple and conflicting goals which states pursue when making transportation decisions see Hans Heymann, Jr., *The Objectives of Transportation in Economic Development*, Rand P-2836, December 1963.

The threat to continued growth of Saudia, Gulf Air, and Kuwait Airways comes not from state control and interference in their affairs, but rather from possible overextension because of fierce competition. Saudia, Kuwait Airways, and Gulf Air are in rigorous economic competition with one other for control of the Peninsular oil businessman. Schemes to unite the latter two have not been successful, and it seems that local national allegiances and economic appetites have conquered their nascent cooperative efforts. It may be worth noting that Saudia's quest for regional supremacy may further complicate cooperative endeavors in the region. Saudia competes actively with the well-established Alia and MEA for regional airline traffic hegemony.

The lack of regional cooperation in the industry is a serious problem. Though Arab airlines have now existed for a few decades, only in late October 1977 did an inter-Arab conference (MECACON) meet to discuss aviation-related issues affecting the region as a whole. Ubiquitous problems of training, standardization, and air-traffic-control have yet to be resolved, and it will be years before substantial reliance on outside sources of expertise can be minimized.

Two further factors, one internal to the regional and the other external, may inhibit the healthy growth of Arab aviation. Regional nationalisms--pan-Arab and local--and the desire for modernization plans to support the political status quo have compelled many Arab governments to take measures to isolate foreign workers from the political and cultural milieu into which they have been brought. Arab states are concerned with rapid economic development and its possible outpacing of social change, and are aware of the inherent political risks of overt dependency upon the West.¹ Arab airlines, though sporting certain Western

¹The spectres of foreign ideas--communism, anti-monarchism-- are compelling Saudi officials to be vigilant of imported work forces. Dependency on non-Western extra-nationals is also a major concern of Kuwait. Kuwaitis constitute only 47 percent of their country's residents and a mere 30 percent of the labor force.

ways, rarely go as far as the Iranian national airlines, for example, whose promotional jingle sings, "In our hearts and many more ways, America, we're growing your way."¹

The second threat to continued Arab reliance on American expertise is tax reform in the United States. Provisions of the Tax Reform Act of 1976 would impose larger taxes on Americans living and working abroad. Foreign earnings exemptions will be reduced as overseas income excludable from U.S. taxes will be pared to \$15,000 from \$20,000 (\$25,000 if the taxpayer has lived abroad for more than three years).² Though these provisions have been delayed three times--to 1 January 1977, 1978, and 1979--their implementation would be detrimental to U.S. businesses, especially those in the Middle East; tax increases of hundreds of millions of dollars would have to be absorbed by U.S. employees and employers. Germany, Britain, Japan, and Italy do not tax the foreign earnings of their nationals, and hence, those countries' services would appear more economically attractive to foreign contractors.

Tax reform measures would affect Arab-American technical assistance programs, and it is precisely these programs that are significant in the long-run. The underestimated, growing Arab-West economic alliance so prominent in the long-term development of Arab airlines suggests that political cooperation will follow, not precede, economic cooperation. The extent to which countries of the Arab world and those of the West are pursuing cooperative economic goals is often underestimated, as similar Western economic assistance programs and packages in several other areas (construction of railroads, highways, power plants, factories, hospitals, among others) are dwarfed by the emphasis placed on growing military alliances as secured through arms and training

¹The rapid mental association of national flag carriers with the politics of their host states is not to be underestimated. Like embassies, national airline offices are particularly vulnerable to terrorist activity. On 11 July 1977, the Air Iran offices in Zurich were destroyed by arsonists. Egyptair offices have similarly been attacked by terrorists.

²"Title X--Changes in the Treatment of Foreign Income," *U.S. Code Congressional and Administrative News*, Vol 1: Laws, 1976, p. 1610.

programs. Judging by the success with which the West (and not the Soviet Union) has managed to satisfy the demands of Arab airlines for technological products and service know-how, other civil economic sectors may indicate a Western involvement of similar scale. Indeed, the vital contribution of Western private enterprise to the economic growth of Arab countries in general--through the training and education of local nationals, the use of local subcontractors and suppliers, and the introduction of advanced management techniques--may exceed the contribution of technical assistance and aid programs of governments and international agencies. Though little-publicized, this use of economic strength and technological advantage through the marriage of Arab capital with Western expertise will continue to constructively serve both American and Arab interests.

APPENDIX 1PASSENGERS CARRIED

	<u>1973</u>	<u>1975</u>
Alia	162,000	380,000 ^b
Egyptair	658,000	916,866
Gulf Air ^a	313,797	650,000
Iraqi Airways	208,000	388,000
Kuwait Airways	453,586	1,578,500
Middle East Airlines	819,000	
Saudia	1,000,000	1,835,733
Syrian Arab Airlines	185,000	341,087

SOURCE: 1973: *Interavia* 10/1975 (from Arab Air Carriers Association), p. 1028.

1975: *World Air Transport Statistics*.

^aGulf Air Commercial Planning Department, 28.4.75 (in "The 'Falcon Airline' is 25--Gulf Air Today," *Interavia*, 9/1975).

^bIn 1976 the number of passengers carried was 475,470. JPRS *Translations on Near East and North Africa*, No. 1669, 24 June 1977, p. 50. Originally from *Al-Dustur*, 11 May 1977.

APPENDIX 2

PASSENGER LOAD FACTOR/WEIGHT LOAD FACTOR
(All Services)

	<u>1971</u>	<u>1975</u>
Alia	32.2% / 27.5%	53.7% / 49.4%
Egyptair	50.1% / 45.4%	56.2% / 50.3%
Iraqi Airways	57.8% / 54.0%	52.6% / 45.8%
Kuwait Airways	53.2% / 48.3%	60.5% / 54.2%
MEA	48.9% / 47.7%	[50.0% / 49.0% (1973)] ^a
Saudia	46.8% / 45.5%	62.9% / 49.0% (59% / 46%) ^b
Syrian Arab Airlines	58.9% / 55.9%	67.0% / 58.6%
TMA	/ 58.6%	/ 54.9%

SOURCE: 1971, 1975 *World Air Transport Statistics*

^a1973 ICAO *Digest of Statistics No. 194, Fleet Personnel.*

^bSaudia Annual Report 1975.

APPENDIX 3OPERATING REVENUES/PROFITS - 1973
(per hour flown)

Alia	\$2185 / +49
Egyptair	1480 / -592
Kuwait Airways	3340 / +524
MEA	2908 / +412
Saudia	1941 / +55
TMA	2320 / +318

SOURCE: 1973 ICAO Digest of Statistics No. 194, Fleet Personnel

TOTAL OPERATING REVENUES/PROFITS

Alia	1975: \$55 million operating revenues ^a \$1 million profit
	1976: \$83.7 million operating revenues ^b \$2.5 million profit
MEA	1974: \$14 million profit ^c
	1975: \$5 million loss
	1976: \$18 million loss for first two-thirds
Saudia	1973: \$2.5 million profit ^d
	1974: \$7.5 million profit

^aJPRS Translations on Near East and North Africa, No. 1669, 24 June 1977, p. 50. Originally from *Al-Dustur*, 11 May 1977.

^bJPRS Translations on Near East and North Africa, No. 1634, 4 April 1977, p. 53. Originally from *Al-Dustur*, 23 January 1977.

^cAviation Week and Space Technology, 4 October 1976, p. 29.

^dThe New York Times, 26 January 1975.

APPENDIX 4

AIRFIELDS IN ARAB STATES

	<u>Total/Usable</u>	<u>With Permanent Surface</u>	<u>Runways Over 3660 m.</u>	<u>Runways 2440-3659 m.</u>	<u>Runways 1220-2439 m.</u>
Bahrain	2/1	1	1	45	0
Egypt	100/81	66	0	0	19
Iraq	78/70	23	0	41	17
Jordan	25/16	13	2	10	1 51
Kuwait	11/6	3	0	3	3
Lebanon	8/6	3	0	3	2
Saudi Arabia	111/88	25	3	17	40
Syria	40/35	25	0	22	2
United Arab Emirates	56/40	12	3	1	9

SOURCE: *National Basic Intelligence Factbook*, July 1977.

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